

REMARKS

This Amendment, filed in reply to the Office Action dated January 12, 2009, is believed to be fully responsive to each point of rejection raised therein. Accordingly, favorable reconsideration on the merits is respectfully requested.

Claims 1-16 are all the claims pending in the application.

Information Disclosure Statement

As a preliminary matter, the Examiner notes that the IDS filed on May 27, 2008 does not comply with the provisions of 37 C.F.R. § 1.98(a)(2) because a legible copy of each cited foreign patent document was not included. However, Applicant respectfully submits that each of the foreign patent documents, listed in the IDS, correspond to US patents and patent publications. Moreover, a copy of the electronic filing receipt indicating receipt of the foreign language documents. Thus, Applicant submits that the IDS was in compliance with 37 C.F.R. § 1.98(a)(2) and request that the Examiner consider the references before issuing the next office paper. Applicant further respectfully requests that the Examiner initial the US patents listed in the above mentioned IDS.

Claim Rejections - 35 U.S.C. § 112

The Examiner has rejected claims 1-11 under 35 U.S.C. § 112, second paragraph, as allegedly being indefinite. Claims 1 and 2 are amended for clarity. With regard to claims 10 and 11, claim 10 recites “biopolymer target that is spontaneously dispersed in a solution is concentrated in the vicinity of the conduction paths by dielectrophoresis or electrophoresis,” which is directed to a hybridization method. Therefore, Applicants submit that the claims comply with the requirements of 35 U.S.C. § 112, second paragraph, and respectfully request withdrawal of the rejection.

Claim Rejections - 35 U.S.C. § 102

Claims 1-4 and 7-11 are rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by Holzel et al. (Biosensor and Bioelectronics, 2003 18: 555-564; hereinafter "Holzel").

The inventions of Holzel and Zenharsen are not related to a hybridization of a sample biopolymer with a probe molecule that is immobilized on a substrate. Thus, neither Nolsel or Zenharsen teach or suggest the features of claim 1 above.

In view of the above, Applicant would respectfully submit that Holzel does not anticipate claim 1. Therefore, claims 3, 4, and 7-11, being dependent on claim 1, are patentable *at least* by virtue of their dependencies as well as for their additionally recited elements. Accordingly, Applicant would respectfully request that the Examiner withdraw the 35 U.S.C. § 102(b) rejection.

Furthermore, with regard to claim 9, Holzel is silent on "wherein said conduction paths are formed on a cover substrate formed from a transparent material, so that fluorescence from the hybridized biopolymer with fluorescent labeling can be observed from the back face of this cover substrate."

The Examiner asserts that Holzel discloses electrodes formed on glass. On pg. 559, section 2.2.4, ln. 12-14, Holzel merely discloses a glass chip, with a first and second electrode, glued to a standard microscope slide and carefully covered with a cover glass. However, Holzel does not disclose forming conduction paths on the cover glass, so that fluorescence from hybridized biopolymer with fluorescent labeling can be observed from the back face of the cover glass. Thus, Applicant respectfully submits that Holzel fails to teach "wherein said conduction paths are formed on a cover substrate formed from a transparent material, so that fluorescence

from the hybridized biopolymer with fluorescent labeling can be observed from the back face of this cover substrate.”

Claim 2

Claim 2 is related to a micro-array substrate for a biopolymer and a pair of two conduction paths connected to a direct-current or alternating-current source installed on the substrate. Claim 2 recites, *inter alia* “probe molecules for biopolymer detection are immobilized on conduction paths’ proximity part in an opposed substrate arranged opposite to said substrate, or close to opposed substrate’s proximity part.”

The Examiner fails to explicitly address claim 2. The Examiner addresses claims 1 and 2 together, but does not specifically address the features of claim 2. For example, the Examiner fails to show where Holzel discloses “...probe molecules for biopolymer detection are immobilized on conduction paths’ proximity part in an opposed substrate arranged opposite to said substrate, or close to opposed substrate’s proximity part.” Furthermore, upon review of Holzel, these particular features are not taught or suggested therein.

In view of the above, Applicant respectfully submits that Holzel does not anticipate claim 2. Accordingly, Applicant would respectfully request that the Examiner withdraw the 35 U.S.C. § 102(b) rejection.

Furthermore, with regard to claim 4, claim 4 recites, *inter alia* “wherein said substrate is a glass, a plastic, or a ceramic, and said two conduction paths are formed on the substrate by means of etching.”

Applicant would submit that the claimed etching would result in a substantive difference in structure than what is disclosed in Holzel. Thus, Holzel fails to teach or suggest “wherein said

substrate is a glass, a plastic, or a ceramic, and said two conduction paths are formed on the substrate by means of etching.” Additional claim 13 is patentable for analogous reasons.

Claims 1-11 are rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by Zenhausern et al. (US 2004/0011650; hereinafter “Zenhausern”). Zenhausern is directed to devices and methods for manipulating polarizable analytes via dielectrophoresis to allow for improved detection of target analytes. *See Abstract of Zenhausern*. Zenhausern does not teach immobilization of a probe molecule for biopolymer for hybridization. Therefore, amended claim 1 is patentable over the cited art.

In view of the above, Applicant would respectfully submit that Zenhausern does not anticipate claim 1. Therefore, claims 3-11, being dependent on claim 1, are patentable *at least* by virtue of their dependencies as well as for their additionally recited elements. Accordingly, Applicant would respectfully request that the Examiner withdraw the 35 U.S.C. § 102(b) rejection.

Applicant amends claim 5 to recite features from pg. 12, ln. 19-22, for example, for clarification reasons. With regard to claim 5, Zenhausern fails to teach “wherein said current is applied through lead wires which are insulated with a nonconductive film.” The Examiner points to para. 221 of Zenhausern as allegedly teaching the claimed feature above. However, the monolayer disclosed in Zenhausern is a physical layer to block solvent accessibility to a detection electrode and NOT to lead wires which are insulated with a nonconductive film. *See para. 221, ln. 19-21 of Zenhausern*. Thus, Applicant would respectfully submit that Zenhausern fails to teach “wherein said current is applied through lead wires which are insulated with a nonconductive film.”

Claim 2

As discussed above, with regard to the rejection of claim 2, the Examiner fails to explicitly address claim 2. The Examiner addresses claims 1 and 2 together, but does not specifically address the features of claim 2. For example, the Examiner fails to show where Zenhausern discloses "...probe molecules for biopolymer detection are immobilized on conduction paths' proximity part in an opposed substrate arranged opposite to said substrate, or close to opposed substrate's proximity part." Furthermore, these particular features are not taught or suggested therein. In view of the above, Applicant would respectfully submit that Zenhausern does not anticipate claim 2.

Furthermore, with regard to claim 4, Applicant would submit that the claimed etching would result in a substantive difference in structure than what is disclosed in Zenhausern. Thus, Applicant would submit that Zenhausern fails to teach or suggest "wherein said substrate is a glass, a plastic, or a ceramic, and said two conduction paths are formed on the substrate by means of etching." Applicant submits a similar argument with regard to the newly added claim 13.

Claim Rejections - 35 U.S.C. § 103

Claims 8 and 9 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Zenhausern in view of Holzel.

Applicant respectfully submits that Zenhausern fails to remedy the deficiencies of Holzel and Zenhausern fails to remedy the deficiencies of Holzel. Claims 8 and 9 are patentable *at least* by virtue of their dependencies from claim 1.

Furthermore, claim 9 is not obvious over Zenhausern in view of Holzel *at least* for the reasons stated above with regard to claim 9. For example, Holzel is silent on "wherein said conduction paths are formed on a cover substrate formed from a transparent material, so that

fluorescence from the hybridized biopolymer with fluorescent labeling can be observed from the back face of this cover substrate.”

New Claims

Claims 12-16 have been added to describe features of the invention more particularly..

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

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CUSTOMER NUMBER

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Electronic Acknowledgement Receipt

EFS ID:	3359590
Application Number:	10590455
International Application Number:	
Confirmation Number:	8513
Title of Invention:	Micro-array substrate for biopolymer, hybridization device, and hybridization method
First Named Inventor/Applicant Name:	Takeo Tanaami
Customer Number:	23373
Filer:	Kelly G. Hyndman/Shawana Johnson
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Application Type:	U.S. National Stage under 35 USC 371

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File Listing:

Document Number	Document Description	File Name	File Size(Bytes) /Message Digest	Multi Part /.zip	Pages (if appl.)
1	Information Disclosure Statement Letter	Q96638LETTER.pdf	91781 <small>dc3d53719d7b15a170b96331a62291c8 e0e4555c</small>	no	2

Warnings:**Information:**

2	Information Disclosure Statement (IDS) Filed	Q96638FILED.pdf	99149 f8f8e5281c094e185c7157796c833ea d0b1041	no	2
Warnings:					
Information:					
This is not an USPTO supplied IDS fillable form					
3	NPL Documents	Q96638OA.pdf	396002 2a7434330ace87674ed518645343e0b 0e220b07	no	9
Warnings:					
Information:					
4	Foreign Reference	Q96638REF1.pdf	2524712 8e13474101d75691060ac4d644b18f 6ce070bd	no	25
Warnings:					
Information:					
5	Foreign Reference	Q96638REF2.pdf	946946 313ce98785b0132a3601ae0fa5eb06 813ae7e	no	9
Warnings:					
Information:					
6	Foreign Reference	Q96638REF3.pdf	924366 0c63e795dd85e4d087c7af98b1e0b82e 4e20c03e	no	11
Warnings:					
Information:					
7	Foreign Reference	Q96638REF4.pdf	945352 53212c4d7c3181e0fb06e09e7c3ef56 a78d1	no	11
Warnings:					
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New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.